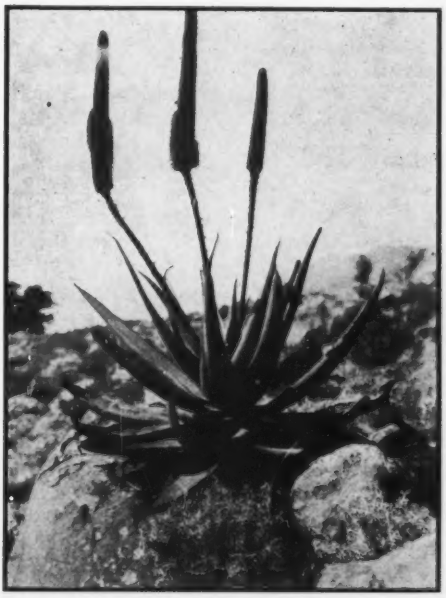
Office Copy

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

Vol. IX JANUARY, 1938 No. 7



Aloe vryheidensis Groenewald, photographed by R. A. Dyer at Louwsburg east of Vryheid, Natal. See pg. 100.

COPYRIGHT JAN., 1938

CACTUS AND SUCCULENT JOURNAL

Published and Owned by the Cactus and Succulent Society of America, Inc., Box 101, Pasadena, California. A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. Subscription $3.00 per year. Foreign $3.00 per year by international money order. Membership in the Cactus Society free with subscription. Mail application to SCOTT HASELTON, *Editor*, Box 101, Pasadena, Calif. *Editorial Staff*: THE ENTIRE SOCIETY. Entered as Second Class Matter at Pasadena, Calif., under act of March 3, 1879.

Vol. IX JANUARY, 1938 No. 7

President's Column ..... W. Taylor Marshall 98
Botanical Exploration in South Africa ..... R. A. Dyer 99
Grow a Cactus ..... R. W. Kelly 101
Four Interesting Plants ..... Hummel's Exotic Gardens 102
Experiences of an Amateur ..... Robert H. Walker 103
Lithops bella ..... J. R. Brown 106
Notes on Crassulaceae ..... Eric Walther 108
A New Arizona Opuntia and Related Species in Series Tortispinae ..... R. H. Peebles 109
The Marston Collection ..... Elzada U. Clover 111
The Golden Flowered Huascha ..... W. Taylor Marshall 114
Editorial ..... Scott E. Haselton 115
Desert Plant Collection ..... Book Review 116
Notes on Haworthias ..... J. R. Brown 118

PRESIDENT'S COLUMN

Your new President and the Executive Board extend to you sincere good wishes for the year 1938, and pledge their best efforts so that the year will show great advancement for the CACTUS AND SUCCULENT SOCIETY.

To further this end, many new members are desired and our aim is for doubled membership by July so that the 10th volume of the JOURNAL may use colored illustrations. This ambitious program is possible if we can all resolve to secure at least one new member in the first six months of the year.

A committee is now preparing a schedule of meetings for the entire year so that out of State members, who visit California, may arrange their schedules to include a meeting. The plan is to invite each of the affiliated societies to have some of their members, who will come to California this year, to plan their visit for August and then to meet with the Executive Board to effect greater cooperation between the parent society and our affiliates. Details of this plan will be forwarded to the affiliated societies as soon as completed.

A committee will be appointed at once to start preparations for a show in May. This is planned to be one of the old-time, popular shows in which amateur exhibits are featured and friendly discussions will cement old friendships and more closely unite our members.

Affiliated societies will be invited to send exhibits to this show and a special class with special prizes will be provided for these entries.

The keynote of this administration will be greater fields of service to our members, to affiliated members, and to all lovers of succulent plants. Your President will welcome and invites suggestions of ideas that may be helpful.

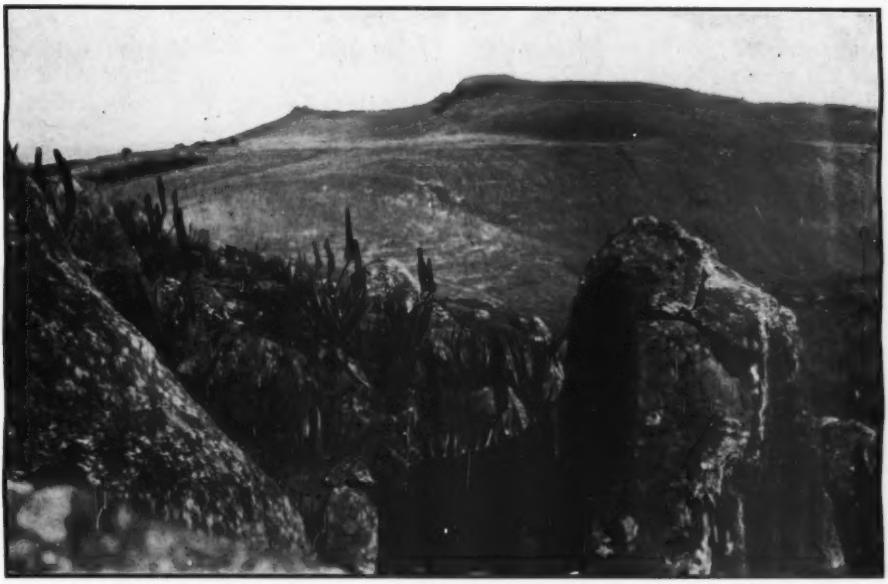
Address all such letters to W. Taylor Marshall, 327 No. Avenue 61, Los Angeles.

W. TAYLOR MARSHALL

SCHWARZ & GEORGI
Apartado No. 7
SAN LUIS POTOSI, S.L.P., MEXICO

Send twenty-five cents for our new illustrated catalog containing 325 different species of Cacti and Succulents.

Mamillaria sphaerica
large yellow flower, blooms very long and easily.



Aloe vryheidensis Groenewald, photographed by author at Louwsburg east of Vryheid, Natal.

Botanical Exploration in South Africa

PART IV.

By R. A. DYER

"It was not until well after midnight that we returned via Magut on our way to Louwsburg and Vryheid.* What hope was there of our reaching our destination without passing a new species of *Aloe* or *Euphorbia* in the dark?" Thus concluded my last installment, but the word undescribed is a more correct expression than "new species."

Hardly had we descended the steep mountain on which Magut stands than we observed in a small valley a colony of *Euphorbia* trees. These must, I think, be included under *E. triangularis* Desf. After a short halt to collect herbarium specimens we set off again at a good speed. For several miles grassy mountain scenery was a restful change from the concentrated succulent growth encountered during the morning in the hot Pongola River valley. Winding up the mountain near Louwsburg we came upon the inevitable undescribed species of *Aloe* which was to prevent our timely arrival at our destination that night. Already the light was failing, but Mr. Reynolds clambered into precarious positions to get the best possible results with the camera. Meanwhile Miss Verdoorn and I kept out of the way and explored other rocky slopes. Here we collected *Crassula* spp., *Delosperma* sp., and *Kalanchoe thyrsiflora*. The specimens of the two former genera were usually wedged in rock crevices with little soil, but, being on the high mountain ridges, they experience fairly moist conditions for the greater part of the year due to water vapour condensation during the cool nights. The stems are comparatively delicate and the leaves soft and juicy.

Having spent as long as possible in this locality we once again determined to accelerate. But as so frequently happens after meeting the outliers of a species, one discovers the headquarters, so to speak, round the corner. So it was on this occasion that only a mile or so further on we found the undescribed *Aloe* growing in its hundreds. On nearby slopes *Aloe suprafoliata* occurred, while *Aloe arborescens*, in full bloom, dominated somewhat protected bush patches and also the more exposed cliffs or krantzes. *A.*

See map on page 200, Vol. VIII, No. 1.

Marlothii, that fond parent of many natural hybrids, must have been in the vicinity as suggested by the presence of one of its hybrid progeny. But driven now by darkness, we hoped to satisfy later Mr. Reynolds' fervent desire to revisit the site to conduct a more thorough investigation.

Subsequently it transpired that this was the same species as discovered a year or so previously by Dr. F. van der Merwe on standstone cliffs or krantzes near Vryheid, in which direction we were then travelling. The following is a rough translation from the Afrikaans account by Mr. Groenewald which accompanied his Latin description in "Tydskrif vir Wetenskap en Kuns" April, 1937. *"Aloe vryheidensis* is closely related to *A. sessiliflora* Pole Evans, but can be distinguished by its thicker, fleshy leaves, which have a glaucous, dark green colour, and by the racemes which are generally shorter than those of *A. sessiliflora."* Mr. Reynolds noted that the ovary of *A. vryheidensis* was peculiarly marked with three longitudinal red stripes. The accompanying photographs, taken on our return journey, illustrate the habit and the natural environment of this interesting plant.

The only species of *Euphorbia* recorded in this area was *E. pulvinata* Marl., but it was too late to do more than collect a small piece for record purposes.

We could only guess at what we passed along the road to Vryheid that evening. It was about midnight before packing was completed. This had to be accomplished while village folk enjoyed the "movie" picture, "Three Smart Girls" in an adjacent building—a most distracting influence.

The following day our course lay in an easterly direction to Nongoma, a small settlement noted mainly for native Mission stations. About 26 miles out of Vryheid another species of the "maculate" group of *Aloes* was found. The inflorescences were quite dry and it was obviously a species which we had hitherto not seen on the trip. The particularly large prickles on the leaf margins attracted attention. It was given the temporary name "Alpha" Aloe after the locality, but has since been described by Mr. Reynolds in the SOUTH AFRICAN JOURNAL OF BOTANY, 1937, as *Aloe deWetii.* It was named after Mr. J. F. de Wet, an ardent collector, resident in the district, who had known of its presence before our discovery. According to Mr. Reynolds, the species is most nearly related to *A. Lettyae,* another of his newly described species in the same JOURNAL. Therein he states that a striking feature of *A. deWetii* is the leaf surface which has a "peculiar dull glossy appearance, as if rubbed with an oily rag or cloth; the teeth are very stout, reaching a length of 10 mm., and are joined by a pronounced brownish horny marginal edge."

On a hillside not many miles further on, where the grass had been burnt, *Aloe suprafoliata,* which is an extreme rarity in cultivated collections, was there seen in thousands. Were they not extremely fire resistant they would certainly have perished in their inception. What a strange fine sight they must present when in full flower with their unbranched, snake-like, young inflorescences rearing their heads above the grass.

More general collecting than usual for us was possible in this mountainous region of grassveld. A very attractive *Watsonia* sp. and a *Moraea* sp. were added to the bag. On a shady slope above the road, where we halted about midday to enjoy a cup of tea from our thermos flask, *Aloe Cooperi* was found in plenty, although hidden effectively from the casual observer by long grass. This species and its close allies have long and comparatively slender leaves, and are far less succulent for instance than those in the maculate group. Owing to the fact that they are usually restricted to grassveld, they are not readily detected when not in flower. The characteristic dry inflorescence, however, is a good clue for the expert eye to follow.

At various vantage points along the road to Nongoma, more *Aloe suprafoliata* appeared, occasionally with *A. arborescens* nearby in similar surroundings to those noted the previous evening near Louwsburg. We decided to pack nothing at Nongoma and for a change had a much appreciated rest.

To be continued.

New Aloes From Southwest Africa

The October JOURNAL OF SOUTH AFRICAN BOTANY, published the following new Aloes described by Mr. G. W. Reynolds, who is contributing valuable information on this genus of South African plants:

Aloe viridiflora (new species).

Aloe wickensii, Pole Evans, var. *lutea* (new variety).

Aloe saponaria (Ait.) Haw., var. *ficksburgensis* (new variety).

Aloe suffulta (new species).

CACTUS—by van Laren. Contains 140 pictures in full color of correctly named cacti. Written for the amateur as an introduction to these fascinating plants. Order now while still available. $5.00

Grow a Cactus

By R. W. KELLY

Those who enjoy growing plants will find a new thrill in growing cactus from seed. Children and grown-ups alike proudly display pots of cactus seedlings to their friends who are not familiar with this fascinating and interesting pastime. For a hobby never lacking in new interest, an occupation for an invalid, or a means of relaxation from the speed and hustle or this modern life—grow cactus.

Cactus are the most diversified in form and appearance of any group of plants. There are midget forms no larger than a thimble, giants as large as trees, round ones, fat ones, skinny ones the size of a pencil, snaky ones which twine through trees in a most serpentine manner, wicked spiny ones which shout "Don't touch" in any language and soft dainty ones as white and delicate as milady's powder puff.

And flowers—cactus bear the most gorgeous variety of colors imaginable, from snowy white to golden yellow through deepest reds and often with two or three tone combinations of various shades. Strange as it may seem, a cactus no larger than your finger (*Selenicereus,* meaning moon Cereus) bears the largest flower of all. Many of the smaller kinds will bloom the second or third season after planting and the size of some of the blossoms in comparison with the plant size will prove a pleasant surprise. Some are so fragrant that a single blossom will fill a room or patio with an exotic perfume.

To start seedlings is easy—simply screen equal parts of sand and leaf mold through a quarter inch screen, mix a smaller amount of garden loam and add a little charcoal if convenient. Put the mixture into a pot, pan, empty coffee can or nursery flat with one or more holes or cracks in the bottom for drainage. A layer of small gravel in the bottom improves the drainage which is most essential. Press the soil smooth, sow the seeds thickly on top and cover with coarse sand or small pea size gravel. Set container into a pan of water until moisture appears on top then remove and cover with a glass pane shaded to keep out direct sunlight. Keep at a temperature of 65 to 80° F. and keep moist until germination starts. Then raise the glass by placing a match under the edge and give a little more light. If seedlings turn reddish, they have too much light. If damping-off (a fungus) appears, dust or spray with a good fungicide. Or better yet, sterilize the soil by pouring boiling water through it before planting seed or bake it in the oven if you can get away with it!

The first seeds start in about a week and appear as tiny round or elongated green beads tipped by two small cotyledons or seed leaves. Shortly thereafter the first tiny spines or bristles appear from the center and then more and more appear until the seedling begins to take form and can be recognized as belonging to the columnar or globular type of cactus.

Transplanting may be done as soon as the first spines grow, but if the seedlings are not too crowded, they may be left until the globular kinds are the size of peas or the tall kinds are half an inch high. The first transplanting should be made into a soil mixture about the same as the planting soil except that more garden loam should be included—about equal parts of sand, leaf mold (peat or sphagnum moss may be substituted) and loam with a trace of lime. A top dressing of coarse sand or small gravel helps the appearance and permits air to circulate better through the soil.

Keep in mind that roots need air and use rather coarse materials to keep the soil porous and friable. Seedlings should be slightly damp at all times, but not soaking wet. After they have grown in the above mixture for a month or so, light applications of very weak liquid manure or soluble balanced fertilizers may be used to force growth, but use only when the plants are making new growth. If they become dormant as in winter they can not be forced to grow with fertilizers, but should be allowed to rest. Later transplantings may be made into richer soil mixtures as above by adding well rotted old manure in small quantities or very small amounts of well balanced commercial fertilizers, but it may be safer for the beginner to omit them entirely at first until experience shows which kinds may be safely forced.

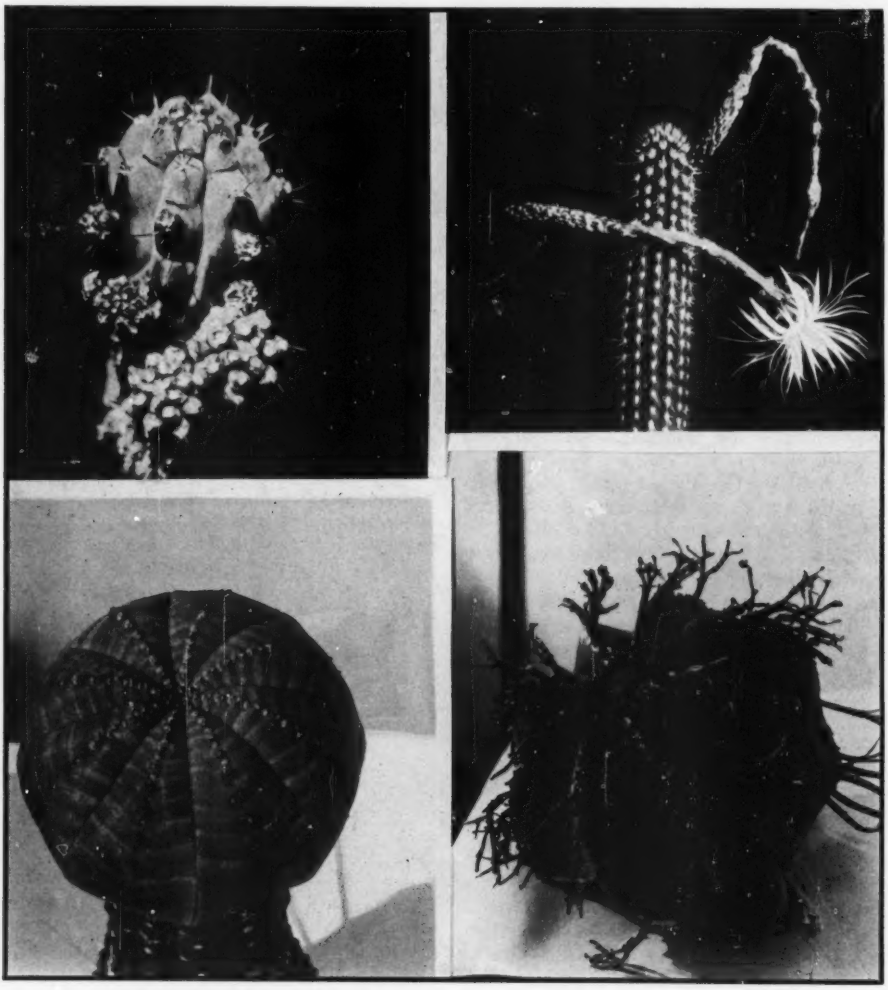
Very delicate or slow growing species may be grafted upon *Cereus peruvianus* seedlings or other good stocks in order to make a more rapid growth, but this is a matter which will be explained further in a later article.

EDITOR'S NOTE: There have been many requests for information on raising cactus from seed and which kinds are best suited for window culture. Few commercial plant growers stock seeds and you are advised to place your orders through a seed man who will se-

lect fresh seeds according to your needs. It is best to experiment with three or four kinds of inexpensive seeds and perhaps a packet of mixed seed than to buy seeds it is best to state whether or not they must be grown in windows and whether or not you prefer the woolly types for their interesting forms or whether you desire the kinds that will flower such as Mammillarias, etc. Next month "Seed-man Kelly" will write on the selection of species and their flowering possibilities.

SUCCULENTS—By van Laren. 140 imported pictures in natural color that enables you to correctly name your succulents other than cacti. Descriptions of the genera and cultural information written for the amateur. Artistically bound in Art linen. First editions $10.00. Second Edition $7.50.

THE STAPELIEAE—By Alain White and Boyd L. Sloane. The first book on Stapeliads. Published in 1933. A very few of this first edition available at $4.00. This edition will soon be a rare book item.



UPPER LEFT: *Lemaireocereus griseus* monstrosus. UPPER RIGHT: *Echinopsis mirabilis*, fruit and flower. LOWER LEFT: *Euphorbia obesa*, grafted. LOWER RIGHT: *Euphorbia meloformis*. From Hummel's Exotic Gardens.

Experiences of an Amateur

ROBERT H. WALKER, Elverson, Pa.

"Oh! How odd! Where in the world did you get it?" I asked of an old lady who once had been my neighbor. "A friend gave it to my mother and she had it from someone who lived in the middle west," she answered. The object of my wonder was a cactus plant, five feet high, in bloom—lovely blooms of exquisite waxy yellow, "What is its Name?" "Just cactus is all I know. But it is too large for me to handle any longer and, unless I can find someone to take it, I must leave it out to freeze." Thus I met and possessed my first cactus. Moreover, I resented it a little that we had a transliterated word, vulgar, albeit I knew the meaning to be "common;" so much uncommon did my prize plant seem to me in its array of yellow—but then it had been named—named *Opuntia vulgaris,* I later learned. However, no one had its equal in all the 60 miles it rode home with me on the running board of my car. From this plant I was afflicted with a disease which Dr. Houghton's "Cactus Book" diagnosed, but only aggravated as it taught me of other books on cacti and of the Cactus and Succulent Society of which I became a member.

Soon there were plants and seeds on their way to my home and this summer I was to know the joy of seeing my own seedlings in blossom. *Astrophytum asterias* began the parade of seedling flowers with a two-flower diadem completely obscuring the tiny one inch plant when the petals unfolded. Now *Astrophytum capricorne* is proudly displaying its crown jewels too, and if my two seedlings of *Leuchtenbergia principis* will only follow suit, my joy will be complete.

Between these two experiences—the "Genesis" with my *Opuntia vulgaris* and the "Revelation" with my seedlings abloom—lies much of work, disappointment, gratitude and delight as I study to keep happy and healthy my family of 200 species.

Unforgettable is the disappearance of a whole tray of seedlings into the maw of a mouse in a single night. An *Astrophytum myriostigma* still bears a scar of a nibble or two made just before my appearance interrupted his feast. I figured his meal at about $25. What an epicure!

Almost as disastrous was an experiment with manure. I had fed the plants with liquid manure made of bat guano. About 15 plants perished of indigestion or cactus gout—just plain rot.

Most interesting and helpful has been the careful keeping of a record of each plant. Minton Cronkhite's article, "Plant Records and Labels," in Vol. III, No. 10, of the JOURNAL gave me the idea. Here the appearance of new

45—6.2123

Hamatocactus setispinus (Eng.)

Cereeae Echinocactanae

S. Texas, N. Mexico

Moody 15c

REQUIREMENTS

Sun: Medium

Soil: Sand

Temp.: Temporate

Moisture: Dry

Literature:
Cact. Jour. Vol. III, 16; Vol. V, 416, 419, 470, 589; Vol. VI, 101; Vol. VII, 6, 173.

This 3x5 card gives a record of each plant. Adapted from the CACTUS JOURNAL. The value of back volumes of the CACTUS JOURNAL is shown by the references.

growth, buds, period of development of flowers, duration of blooming period, fruit formation, etc., are all noted. (See the specimen card herewith). Thus I am able to muse over such phenomena as the blooming of a *Neomammillaria applanta* on exactly the same date for three consecutive years; the date, May 8, and this year it buried itself under a wreath of 25 flowers.

Hamatocactus setispinus has the longest blooming period of any plant in my collection, bedecking itself in beauty from June to October and still wearing buds, which then seldom develop, when it must be taken indoors. One large bud on this plant persisted all last winter, but finally dried away without opening this past spring. This plant also seeds itself and raises quite a family unassisted. Next longest is the flowering season of *Thelocactus bicolor.*

To observers who visit my collection the most unbelievable blossoms are the pink loveliness of the *Lophophora williamsii* and the green-chocolate flowers of *Echinocereus chloranthus.*

45—6.2132

Hamatocactus setispinus

June 21-1932 Plant 2 in. high, 2½ in. diam. Better examine roots.
Under body of plant alive with mealy bugs. Cleaned. Sprayed.
July 7-1932 Bud forming—resembles tiny pine cone.
July 17-1932 Other buds forming in areoles atop the plant.
July 23-1932 In flower. Yellow petals touched with red inside at base.
Like an amber chalice of wine. Closed night. 4 days in bloom.
July 24-1932 Petals have taken on a reddish tint.
Sept. 29-1932 Last bud opened indoors.
Fruit of first blooms turning red.
May 1-1933 Fruit drying.
June 1-1933 Fruit opened and has shuted its seed down to the soil.
Buds forming.
Aug. 2-1933 Seedlings? Yes, a new family of self-sown seeds.

RECORD ON BACK OF CARD

On its own roots *Chamacereus silvestrii* defiantly has refused to blossom for five years. Grafted it multiplied its peanut-shaped growth many times more than on its own roots, but still refuses to give me a flower. On the other hand *Aporocactus flagelliformis* grafted on *Nyctocereus serpentinus* stretched forth its slender stems and bedecked them in an array of inflorescence which so much exhausted the stock that it died. And did anyone ever advocate a stock for grafting as a medium in which to root a cutting? Well I can. Three times I tried to graft an *Echinopsis multiplex* and three times, just when I supposed the union complete, it produced roots which pushed the scion from the stock. Two of these grafts were on *Acanthocereus pentagonus* and one on *Nyctocereus serpentinus*.*

But most trying to the patience are my *Ferocacti. F. townsendianus* and *F. uncinatus* produce buds each year which develop to about the size of garden peas and then waste away, and then the plants go on making new growths.** *Ancistrocactus scheeri* behaves in similar fashion. *Echinomastus* and *Sclerocactus* refuse to live here at all, but *Echinocereus* and *Echinopsis* do very well although the latter flowers less frequently than does the former.

Last winter an experiment was made with some cacti which were said to be winter-hardy. *Opuntia opuntia, O. basilaris, O. erinaceae, Echinocereus reichenbachii* and *Coryphantha vivipara* were used and all endured the winter which was rather an unfavorable one for plants. Some of the time mild, some of the time severe, most of the time wet, the past winter here destroyed or devitalized many established hardy perennials hence the cacti were really put to the test.

This summer our gardens were deluged with Japanese beetles and they are very fond of cactus flowers and of the leaves of both *Pereskia* and *Pereskiopsis*. The English sparrow is our ally here. He eats his fill and spits the surplus on some convenient cactus spine for future use. This is not a new trick to him, however, for he had previously achieved a queer color combination by impaling green cabbage worms on the spines of *Echinocactus grusonii*.

Until a few years ago I knew absolutely nothing about cactus plants, but I am amazed at the immensity of misinformation revealed in the questions of my visitors. Ninety per cent of them refuse to believe that any cactus flowers except the *Epiphyllum*. So fixed is this idea that each plant is pointed out in turn and the doubting question asked—"and this one gets a flower, too?" Some of them tell me things of interest too, as did an old man who helped in earlier days to build railroads in the middle west. He told me they used the cactus root as a soap and it was considered especially fine when laundering garments infested with "seam squirrels." Or am I gullible? Still another's disgust of my hobby lay, I gathered, in an experience of his youth when he sat on what appeared to be a soft cushion-like mat of cacti. Lo! he arose.

The danger period here is early spring; the dangers, rot and sun scald. April and May are usually quite rainy months with a night temperature too low to risk the cacti outdoors. By June first, then, the sun is sufficiently hight to scald many of them unless carefully sheltered. My plants are kept on a table with a sliding screen, which serves as a protection against too much sun or too much rain until they become hardened again. This arrangement works very well, and with blossoms rewarding me from May to October I am content.

EDITOR'S NOTE: Mr. Walker's experiences are most interesting, especially because he tells us which species flower for him. The mastery of the true names is not only a satisfaction to Mr. Walker, but he can pass on this information to others. Perhaps the writer will review his trials and errors in soils, potting, watering, seed raising with required age to flower, and pest control. May we hear from you again?

*Probably due to a poorly joined graft or lack of pressure. May be caused by the cut sections being made with a dull or unsterilized knife.

**Sometimes due to lack of water. Perhaps the soil does not have sufficient food value. Try adding a little potash.

IS YOUR JOURNAL FILE COMPLETE?

Complete your file of the CACTUS JOURNAL while they are still available. There is hardly an article in the magazine that does not refer back to additional data or illustrations that appeared in a former issue. You may obtain all of the back numbers now and you may pay while you are using them—write your own terms. We want these back numbers in use and our present membership is entitled to first choice. Write us your needs and we will quote the costs. These will be a priceless contribution to succulent literature with the index of these first ten years of publication.

I enjoy very much having the reprinted set of the Cactus volumes, THE CACTACEAE, and have been using them a great deal. I think that the appearance of the reprint has done a great deal to add to the prestige of the Society.

FORREST SHREVE,
Desert Laboratory of Carnegie Institution.

QUESTIONS AND ANSWERS

Mrs. R. C. A., Worcester, Mass.

I send you a list of my needs, in fact I need *everything!*

What to use for a scale spray; how much watering in winter for plants in small pots in a living room at about 70°; what to do with a cactus which has patches of yellow going rapidly up the sides, etc.

You probably think I am without common sense, but I've only been growing cacti for about a year and I feel as helpless as a woman with a new baby.

No one in this vicinity, so far as I know, has any fundamental knowledge of cacti and their needs.

If you could find room in the JOURNAL to run a series of articles for beginners I think it might be a great help to other people in my position.

ANSWERS

Spray for scale:

1 pint warm water,
½ teaspoon soap powder,
1 tablespoon "Union Oil Garden Spray" or any good oil spray,
20 drops "Black Leaf 40."

Shake well and spray on infected plants and shade until they dry. Repeat each third day until three treatments have been given, wait three days more and wash plants with spray from hose.

Patches of yellow spreading over a plant indicates an orange fungus working on tissues.

Cut off all of the stem effected and examine central tissues cutting until clean and firm flesh is reached. Make a final cut with a knife that has been sterilized by fire or carbolic acid solution. Put powdered flowers of sulphur over cut and allow to dry and callous, then re-root.

In winter water plants in small pots once a week allowing the soil to entirely dry out between waterings. Increase water only when plants can again receive lots of fresh air.

Mr. E. O. Orpet of Santa Barbara, California, reports: "I have flowered *Titanopsis calcarea* out of doors here for the first time,—also have several clumps of *Fenestraria* with a very large yellow flower, a pressed specimen of which I enclose. I have previously flowered *F. aurantiaca* and *F. rhopallophylla*, and bought this seed from Triebner in S. W. Africa, who lists only the two varieties. The color and size of this is quite different from either of the others, and the plant fingers are also larger and very clearly marked.

LITHOPS BELLA.

By J. R. BROWN

Lithops bella N. E. Br. (*Mesembrianthemum bellum* Dtr.) One of the interesting mimicry plants of South Africa. When in flower, one fully realizes the fitness of the appellation *bella* as it is very charming and beautiful indeed, the lustrous white flowers being further enhanced by the clusters of bright yellow stamens.

The bodies of this sp. are of a light greyish-brown color and vary in height according to the degree of heat and light in which they are growing. Under the conditions in which the plant shown in the photos was grown and which would seem to be about the best conditions here, the bodies or growths are from 13 to 20 mm. above the soil surface, but plants grown under more shaded conditions, stand 50 mm. high.

The description in *"Mesembryanthema"* of the color of this plant is very good, "lobes convex on top, which is of a buff brown, light brown or grey brown color, with fuscous or dark greenish branched markings that are not impressed or sunk below the surface," however, the markings are decidedly impressed, especially so in the colder weather of winter, when also, the colors are intensified. It is to be noted, however, that plants grown in what are considered too shaded conditions have the lobes very convex and almost smooth, the color of these plants is also much paler throughout. In the above mentioned work *L. Lericheana* Dtr. is given as a syn. of *L. bella* N. E. Br.; there is perhaps good reason to doubt this.

Plants of *Lithops* previous to and during the flowering period look much larger, due to the expanding of the fissure at this time, this varies considerably in different spp. The seed capsule would seem, as growth continues, to be squeezed to one side of the body, where it gradually becomes inverted and the seeds scattered so that under favorable conditions a colony of young plants may arise around the parent plant. Prof. Kurt Dinter mentions coming upon this *Lithops* on a little plateau, strewn with grey granite chips, the color of which it simulates. This locality was Aus in the Luderitzbucht district of So. W. Africa. It flowers here during October and is at its best during the late afternoon hours. The photos show a plant of six growths in the early stages of flowering and the same plant 3 days later with the flowers fully expanded and almost entirely concealing the plant.

Lithops bella N. E. Br. nat. size. Photo by J. R. Brown.

Graptopetalum occidentale Rose. (app. x 0.6)

Notes on Crassulaceae

By ERIC WALTHER, *Botanist Golden Gate Park*

We had hoped that the last word on *Graptopetalum* had been said for a while, but our hope was in vain. In a recent issue of the Bulletin of the Royal Botanic Garden at Kew, 1937:4:276, Mr. A. A. Bullock creates the new combination *Sedum paraguayense* (N. E. Brown) Bullock, for the well-known *Byrnesia weinbergii* Rose.

We had previously transferred the species to *Graptopetalum*, and still feel that here is its rightful place. However, it seems that both Mr. Rose and myself erred in giving precedent to the specific epithet *"weinbergii,"* which was a "Nomen nudum," when N. E. Brown published the misleading name *Cotyledon paraguayense.*

It follows that, whatever we may decide as to the generic assignation of this plant, its rightful specific name must always remain *"paraguayense."*

So as to restore the consistency of our records we here make the necessary new combination: *Graptopetalum paraguayense* (N. E. Brown) E. Walther, *comb. nov.* Our thanks are due to Mr. Bullock for his gracious cooperation.

We take this opportunity to publish a more adequate picture of *Graptopetalum occidentale* Rose, taken of a plant obtained through the courtesy of Bristol-Marshall expedition, 1934, originally collected near Alamos, Sonora.

1938 OFFICERS

President.....W. T. MARSHALL
Vice-President.....C. CLUM
Secretary.....J. S. DENNY
Treasurer.....DR. R. W. POINDEXTER

Directors:

Howard Gates, R. W. Kelly, Dr. F. L. Kennedy, Gilbert Tegelberg, Mrs. Harry Johnson, Edgar M. Baxter, Frank Cramer, Dr. R. L. Craig, W. F. Turner, Carl Brassfield, J. C. Pirtle.

The ten honorary Vice-Presidents will be listed in the next JOURNAL, stating their contributions to science this past year.

J. SHERMAN DENNY, *Secretary.*

A New Arizona Opuntia and Related Species in Series Tortispinae

By R. H. PEEBLES

Opuntia Loomisii sp. nov.

Planta parva prostrata seu adscendens; radicibus tuberosis; articulis glaucis obovatis basi constrictis; pulvillis orbiculatis seu oblongis parvis humilibus subremotis superioribus solum armatis; aculeis compressis tortis albidis; floribus flavis; ovario anguste obconico inarmato, pulvillis remotis inconspicuis; bacca clavata paulum succulenta.

Plant 2 dm. high, 5.5 dm. in diameter; joints with pale transverse markings or corrugations, the largest 14 cm. long, 11 cm. wide, 2 cm. thick; areoles scarcely elevated, 2 to 4 mm. in diameter, about 2.5 cm. apart, in age developing light-brown glochids 3 to 4 mm. long; spines confined to the upper third of the joints, 1 to 4 in number, at first brownish toward the base, but soon fading grayish-white, 2.5 to 4.0 cm. long; flowers fading to salmon-pink, 5 cm. in diameter; ovary 3 to 5 cm. long; fruit greenish-yellow or red-tinged, 4 to 6 cm. long.

Type, *H. F. Loomis No. SF 298*, Prescott, Arizona, Aug. 10, 1930, represented by a plant grown under cultivation at Sacaton, Arizona, and material removed from the cultivated plant and deposited in the U. S. National Herbarium, Washington, D. C.

The species is named for Harold F. Loomis, a student of Arizona cactus. When Mr. Loomis collected the plant, he made the following note: "Very common species on decomposed granite soils in hills south of city. Low, not over 1.5 dm. high, roots tuberous."

The above description is drawn entirely from the type plant, after 6½ years in cultivation. In the cool, shaded pine woods of its native habitat the plants are smaller and less spiny than under the arid atmospheric conditions prevailing at Sacaton, 4,000 feet lower in elevation. The writer made the following note when collecting *No. SF 622* at the type locality, August 14, 1932: "Common, but not abundant. Plant small, low, from tuberous roots, spines flattened, twisted, nearly white throughout, 3 to 5 cm. long, 1 to 3 at an areole, fruits clavate, 4 to 5 cm. long."

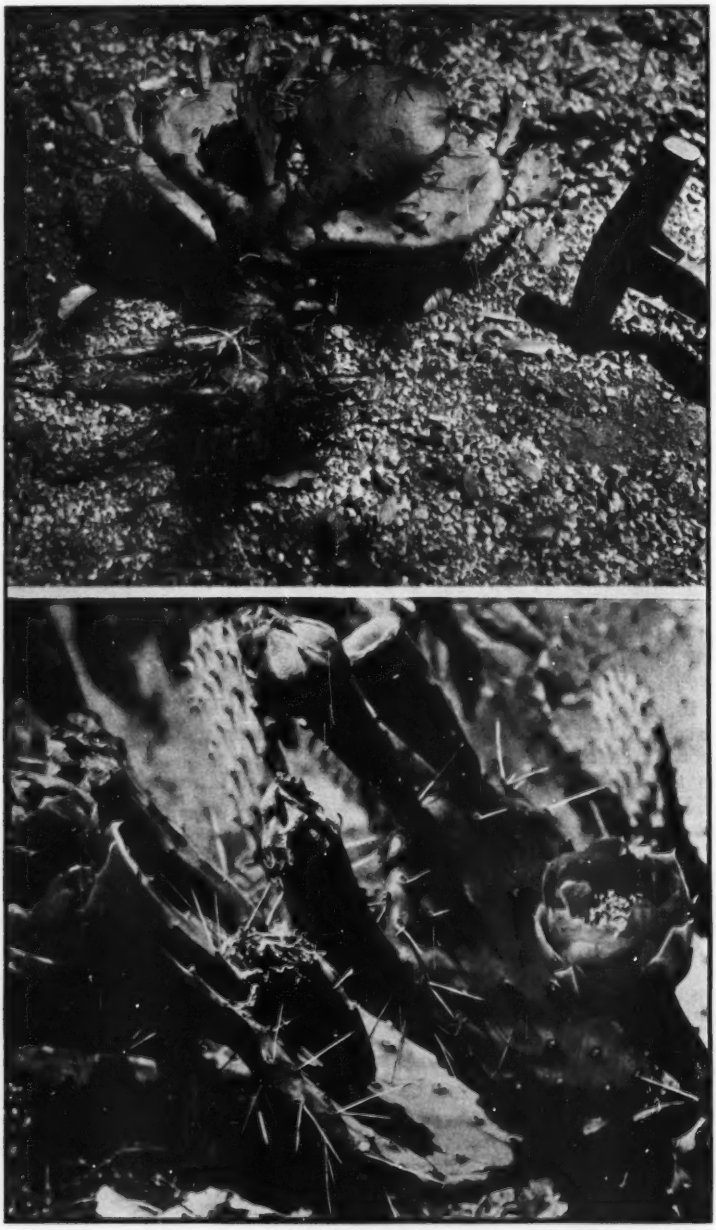
Inadvertently, seeds of the type plant have not been preserved, but seeds from *Peebles & Fulton No. SF 810*, collected 18 miles south of Snowflake, Navajo County, Arizona, May 28, 1934, are 3.9 mm. in diameter, pallid, minutely roughened, the commissure acutish. *No. SF. 810* was found in association with *Pinus ponderosa* Lawson, the flowers were yellow with dark centers, and the thickened roots resembled sweet potatoes.

Opuntia Loomisii is relatively common, although inconspicuous, in central, eastern and southeastern Arizona. It grows in association with the nut pines and extends into the yellow pine zone. Mr. A. R. Leding, State College, N. M., has living specimens from New Mexico which belong to this species. Unusually robust specimens found in the Chiricahua Mts. and in the vicinity of Nogales have been referred to *O. Loomisii* with some reluctance, although such forms may be merely the result of favorable environment.

Probably Britton & Rose (1, p. 132) had in mind *O. Loomisii* when they referred to *Opuntia stenochila* Engelm. & Bigel. as "the common low, spreading *Opuntia* of northwestern New Mexico and Arizona." A search through the Herbarium of the Missouri Botanical Garden and the U. S. National Herbarium failed to reveal any specimens identified as *stenochila* except the type, which was collected by J. M. Bigelow at Zuñi, N. M., in 1853. In fact, the writer has been unable to locate any material whatever that could be identified as *O. stenochila* by comparison with the type specimen, an experience shared with Wooton & Standley (2, p. 446).

The photograph of *Opuntia delicata* Rose in Britton & Rose (1, p. 133) is remarkably like our plant, but, according to their key (ibid., p. 126), the roots are not tuberous, and the species is described by Rose (3, p. 310) as having ovate joints, brownish spines and fruits only 2 or 3 cm. long. We have collected throughout southeastern Arizona, but have not found a plant that could be identified positively as *O. delicata*, although Rose wrote that it is "Common in southeastern Arizona and observed at Calabasa, Nogales, and Benson."

An adequate understanding of series Tortispinae as a whole, together with a liberal con-



ABOVE: *Opuntia Loomisii*

Peebles SF 1024, 33 miles from Young on Payson Road, at 5600 feet elevation under the Mogollon Rim, Arizona, May 24, 1937. The species is abundant in the Tonto Basin.

BELOW: *Opuntia Loomisii*

A plant grown from a cutting from the type plant.

ception of specific limits, may indicate that *Opuntia Loomisii* should be included with *O. macrorhiza* Engelm., although this eventuality seems improbable. Their ranges are not contiguous and the latter was described by Engelmann as having terete spines, and, by Britton & Rose (1, p. 130), as having dull green, occasionally spineless joints.

The characters and distributions for the first four species in the following key to species are taken, for the most part, from Britton & Rose (1) and Engelmann (5).

CITATIONS

(1) Britton, N. L., and J. N. Rose, The Cactaceae I. 1919.
(2) Wooton, E. O., and P. C. Standley, Contr. U. S. Nat. Herb. 19. 1915.
(3) Rose, J. N., Contr. U. S. Nat. Herb. 13: 9. No. 7. 1911.
(4) Engelmann, G., Bost. Journ. Nat. Hist. VI. 1850.
(5) Botanical Works of George Engelmann. (Compilation). 1887.

Key to species related to **Opuntia Loomisii**

Roots fibrous, spines 1 to 8

Spines several, often 6 or 8, at each areole, the longer ones 3 to 6 cm. long, usually borne well down on the sides of the joints (Wisconsin to South Dakota, Texas, Kansas, Colorado, and New Mexico; northern Arizona) ..... *O. tortispina*

Spines 1 to 4 at each areole, 2.5 to 4.0 cm. long.

Fruit very juicy, clavate, in the type as long as the joint (known only from the type collection, Zuñi, N. M.) ..... *O. stenochila*

Fruit drier, oblong, 2 to 3 cm. long (plants agreeing with description rare; southeastern Arizona) ..... *O. delicata*

Roots tuberous, spines 1 to 4, sometimes lacking.

Spines terete, joints dull green, sometimes spineless ..... *O. macrorhiza*

Spines flattened, more or less twisted, usually 1 to 3 at each areole, joints gray-green, transversely marked or corrugated, fruits 4 to 6 cm. long, rather dry (pine woods, Arizona and New Mexico) ..... *O. Loomisii*

The Marston Collection of Cacti

Mr. Edgar Marston, a resident of Colorado Springs, Colorado, has probably one of the finest collections of cacti in this country.

These plants are under glass in a three-room, hail-proof greenhouse. Steam heat is supplied for winter weather and a ventilating system keeps the temperature down in the summer.

Although Mr. Marston is engaged in this study as a hobby, he carries on scientific research of an experimental nature and has his laboratory excellently equipped with apparatus.

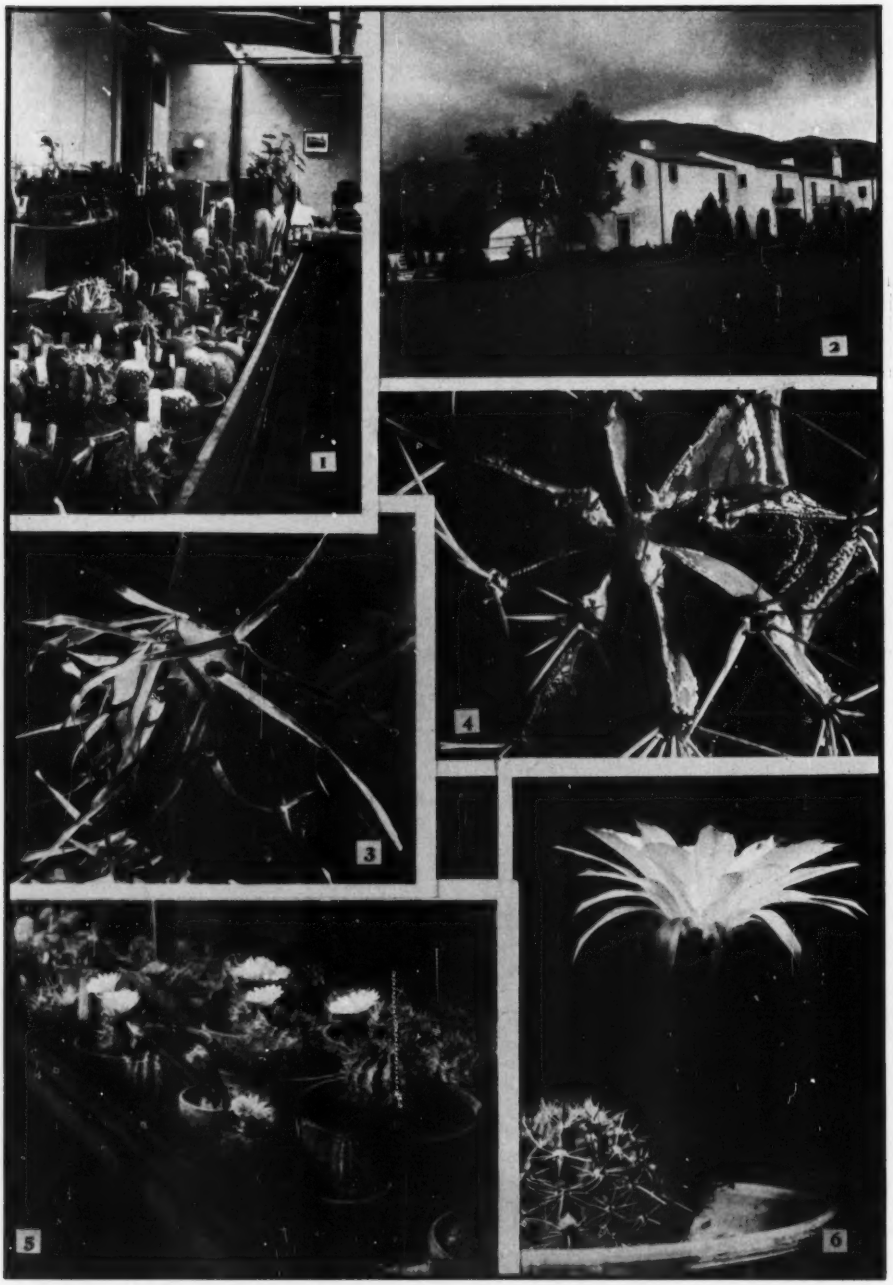
The collection of cacti includes much material endemic to the United States, a fine collection of Mexican Mammillarias and many other Mexican species, numerous epiphytes from Central and South America, and an especially rare and extensive collection sent directly to him from the more remote parts of South America. There is a small representation from the West Indies and other islands. The most spectacular group of plants is a large and valued collection of cristates assembled from various regions of the Americas. Mr. Marston is very successful in making inter-species crosses and in growing seedlings. He has a number of seedling hybrids produced from his own material, and has succeeded in growing many plants from the seeds developed on his cristate forms.

The author has spent the last two summers identifying South American and other species in this collection, and, sponsored by Mr. Marston and accompanied by Miss Carol Davidson of Colorado Springs, has covered southern Colorado and southern Utah collecting all species and studying soil conditions and field distribution.

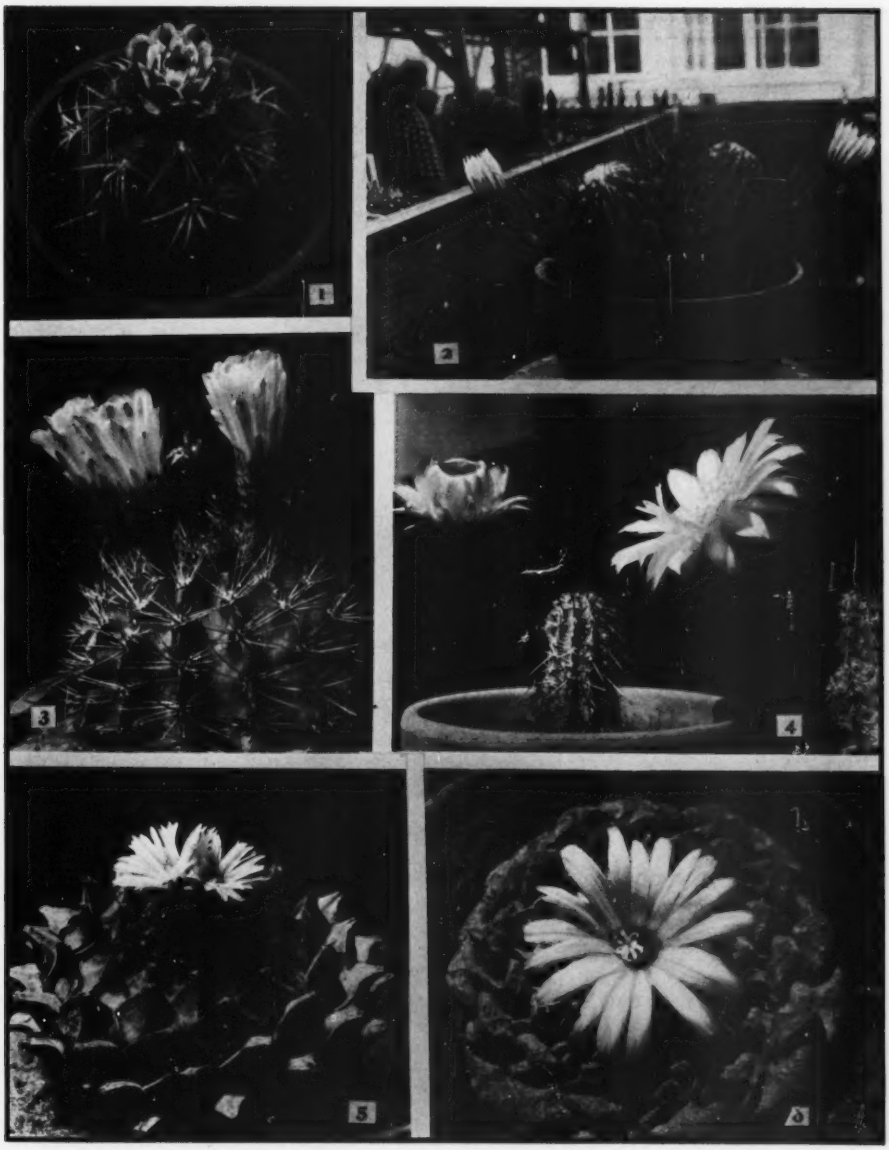
Although little has been heard of the collection or of Mr. Marston's activity in this field, his excellent selection of South American species has permitted detailed work with this exotic and little known group; and his deep interest and financial aid are making possible a rather thorough study of the Cactaceae in the less accessible parts of the Southwest.

ELZADA U. CLOVER,

Department of Botany and Botanical Gardens
University of Michigan, Ann Arbor, Michigan.



The Marston collection: 1. Center bench in one of the rooms of the Marston glasshouse. 2. The Marston home showing a portion of the glasshouse. 3. *Tephrocactus turpinii* according to Backeberg, *Opuntia glomerata* or *turpinii* B. & R. 4. *Astrophytum ornatum*. 5. A part of the South American collection. 6. *Lobivia aurea*.



Mr. Marston has been most successful in flowering cacti in Colorado: 1. *Gymnocalcium loricatum.* 2. *Lobivia ferox.* 3. *Acanthocalcium violaceum.* 4.*Lobivia shaferi.* 5. *Obregonia denegrii.* 6. *Strombocactus disciformis.*

Lobivia huascha with its golden yellow flowers photographed in the garden of Mrs. William Otte, Santa Barbara, Calif.

The Golden Flowered Huascha

By WILLIAM TAYLOR MARSHALL

Lobivia huascha (Weber) Marshall comb. nova.
Cereus huascha Weber, Monatsschr. Kakteenk, 3:151-1893.
Cereus huascha flaviflorus Weber, Monatsschr. Kakteenk, 3:151-1893.
Trichocereus huascha B. & R. Cactaceae 2:142-1920.

First described by Dr. Weber in the October, 1893, issue of MONATSSCHRIFT FUR KAKTEENKUNDE in response to a request of Mr. Mundt, who had grown a plant from seed.

Dr. Weber's description was rather meager as he simply stated the body was cylindrical branching from the base; spines brown, about 2 cm. long; radial spines 8; central spine 1; flower yellow or red, in full sunlight, about 10 cm. long with fleshy-tube; hairs on flower tube curly; filaments in two series, one row from the center of the tube and the second from the throat.

He mentioned two varieties, both from Andalgala, Province of Catamarca, Argentina.

The yellow flowered plant he called *Cereus huascha* var. *flaviflorus,* and this is the plant we are now considering, and *Cereus huascha* var. *rubiflorus.*

The latter, however, was a very different plant and was given specific rank by Weber in 1897 as *Cereus andalgalensis,* only to be referred to the genus *Lobivia* by Britton and Rose. (Cact. 3:56).

Weber noticed the analogous position of *Cereus huascha* at the time of publication as he compared the "vivid and short flower" to the flowers of *Cereus spinibarbis* (Eulechnia), *Cereus intricatus* (Trichocereus strigosus) and *Cereus lamprochlorus* (Trichocereus). "except that these have longer, white (nocturnal) flowers."

Britton and Rose say of *Cereus huascha,* and *Cereus* (now Lobivia) *andalgalensis,* (Cact. 3:57) "Both species are still little known and further study of them is much desired."

As the flowers are essentially day blooming, (note statement in original description) although opening in the afternoon with us here, the plant can not be referred to the nocturnal, long tubed, genus *Trichocereus,* but must be associated with the shorted tubed, diurnal genus *Lobivia* as I now propose.

An illustration appearing in the new GUIDE TO THE DESERT PLANT COLLECTION by William Hertrich, curator of the Huntington Botanical Gardens on page 9, shows a plant of *Lobivia huascha* with twelve flowers fully open and was photographed about 11 o'clock in the morning.

My plant has produced several flowers which opened from 3 to 4 p. m. and remained open until the following day.

EDITORIAL

With the close of another year, your Editor wishes to thank those loyal members who have contributed information for publication in the JOURNAL. It is to those who have sent in suggestions, notes, scientific articles, new species and photographs that all credit is due. After eight years of editing the JOURNAL, we are glad to report that during each month more copy was received than could be contained in a single issue. This is a healthy condition and by all means let's see that it continues.

To some contributors there may seem delays before their article or photograph is published, but their leniency is always appreciated. Many times the manuscript needs checking, sometimes by several who are authorities regarding that particular subject. A photograph may be needed or supplemental information. Your Editor endeavors to make each issue balanced matter between scientific articles, popular notes, cacti and the other succulents. Material not returned is being held for future publication.

The JOURNAL has no commercial axe to grind and although some of the most active workers are among our essential commercial men there is no dictation of policies from them. Without the work of commercial field men and horticulturists the interest in succulents would lose ground. Let us not unjustly condemn them, but understand their enthusiasm, which is many times the only compensation they gain from their hard work.

The commercial men should be tolerant with those who exchange plants or who have the fun of sharing plants with others. After all, if every plant or cutting had its price, much of the joy would be lost. Gifts to scientific institutions should be encouraged; it is far better to have a rare plant properly housed, cared for and recorded than to hoard plants and data valuable to science with the usual result of eventual loss. 1938 should be a year of cooperation with botanical gardens so that they may continue to build these collections, which will supply the scientific data needed to keep alive the interest in succulents. If you have outstanding plants or collections that you wish to present to the proper institution, you should communicate with your Editor.

One year from this date, the first ten years of the JOURNAL will have been completed and there will be published a cumulative index and comments on the articles which require additional information. The fiscal year will then be adjusted to start each volume with the January number. Whether the format is changed depends upon popular demand, but it is hoped that color may be introduced as a permanent feature. This is wholly possible even during this year if the membership becomes sufficiently increased.

During the year your Editor will publish definite editorial policies which are now possible after ten years of experience in introducing a new magazine to a new horticultural group. With the enthusiastic cooperation of our new president, William Marshall, and the Board of Directors, the successful termination of this first decade will pave the way for a second ten years of work with this fascinating group of plants.

There is an immediate need for volunteers to write on the following subjects:

My ten favorite cacti and why.

My ten favorite succulents and why.

Botanical gardens featuring succulents (series).

Makers of succulent history.

Makers of present day succulent history.

Habitats of cacti (with their climates and seasons).

Habitats of succulents other than cacti (with their climates and seasons).

To syringe or not to syringe cacti.

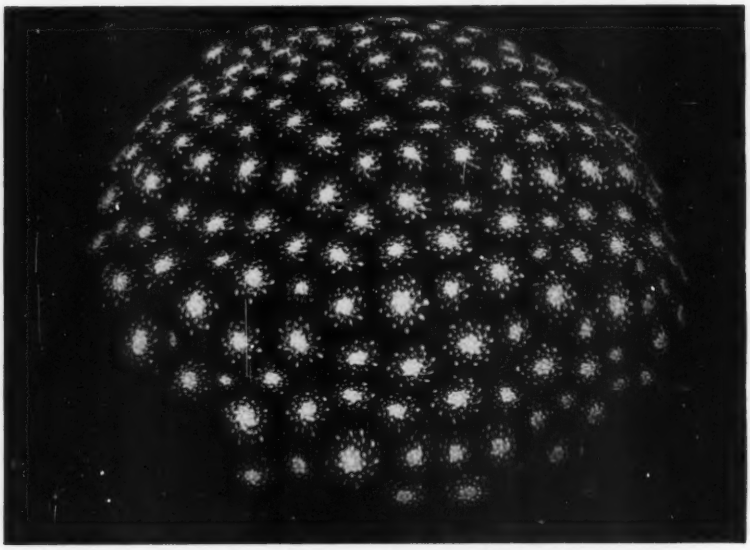
Succulents (including cacti) that grow and flower in my locality.

How I started growing succulents (including cacti).

How I solve the growing problems in my locality.

If members will actively take a part in the above discussions it will lead to other interesting subjects, as we endeavor to publish more articles that will be helpful to beginners, who are the majority and have a just claim for popular articles.

SCOTT E. HASELTON



Mammillaria compressa De Candolle

Commonly known as the pincushion cactus. This specimen plant is three feet across and was collected in Mexico in 1911 as a small plant with three heads. Photographed by William Hertrich for "A Guide to the Desert Plant Collection."

Desert Plant Collection

Twenty years ago there was started at San Marino Ranch a desert garden. When this work was begun, little did the late Henry E. Huntington realize that this garden was to include the world's finest collection of succulents. The results of the then superintendent, Mr. William Hertrich, have quietly but steadily progressed until today this one man, now curator of the Gardens, may well be proud of his contribution to science.

Huntington Botanical Gardens are located at San Marino, California, and the cactus and other succulents occupy more than fifteen acres and includes more than 15,000 plants. The aim of Mr. Hertrich has been to assemble every available species that can be grown in the open in southern California. Today, the plants have attained a maturity that has never been duplicated in cultivation and are therefore of inestimable value for the scientific data which Mr. Hertrich systematically records.

"A Guide to the Desert Plant Collection" is the name of a booklet written by Mr. Hertrich and recently published by Huntington Botanical Gardens. This booklet of 32 pages is an introduction to the various types of Xerophytes and pictures 30 unique and interesting plants which are representative of the various families and genera. The cover plate in colors is an excellent example of the flowers that are constantly seen by those who live near enough to visit the Gardens.

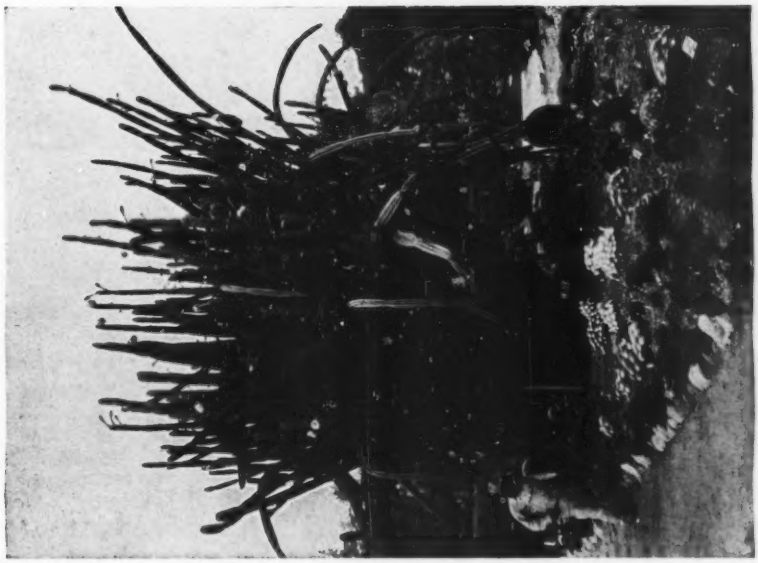
This booklet is written in simple words and the description of the groups will be most valuable for the student and those who wish a general explanation of how these plants are divided into groups. The more advanced collector will be attracted by illustrations of plants which have never before been published.

Many visitors of the Garden will find helpful information in this booklet and with the renewed nation wide interest in these plants Mr. Hertrich's first publication will help others to know more about this fascinating group of plants.

The Cactus and Succulent Society may well boast of the work of another of its charter members and is indeed grateful for his contributions and loyal support in their work.

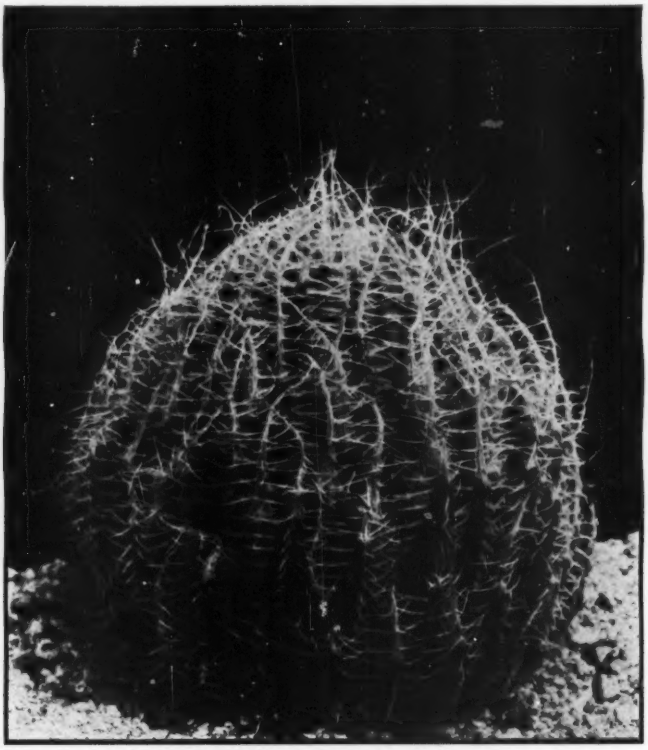
EDITOR'S NOTE: Members of the Society may obtain a copy of "A Guide to the Desert Plant Collection" by addressing the Huntington Botanical Gardens, Wm. Hertrich, Curator, San Marino, Calif. This booklet will be sent post paid for 25c. Let us tell Mr. Hertrich what we think of his booklet and the work he is doing.

Puya alpestris (Peopp. & Endl.) Gay
From Chile; with interesting flowers of deep bluish green. Left, *Cereus Peruvianus* forma *monstrosus*



Cereus xanthocarpus K. Schumann
The most massive cactus in the Garden, its approximate weight being five tons

Two of the illustrations from "A Guide to the Desert Garden." A booklet printed at the Press of the CACTUS AND SUCCULENT SOCIETY OF AMERICA (Abbey San Encino Press). Photos by William Hertrich.



Haworthia gigas Poelln. nat. size

Notes on Haworthias

By J. R. BROWN

Haworthia gigas Poelln. Repert. Sp. Nov. 31 (1932) 84.

Plant about 9 cm. in diam., with very numerous leaves. Leaves erect-incurving, very dark or reddish green, almost shining, never pellucidly spotted, 5-6 cm. long, about 6 mm. wide, with dull and inconspicuous vertical lines, somewhat stiff, lanceolate, long acuminate and ending in a very long, ciliate toothed, white awn, face slightly rounded, back very convex and keeled upwards or often doubly keeled, the margins towards the base smooth, the margins from the middle upwards and the keels with 4 mm. long, white, shining, ciliate teeth.

Flowers not seen.

Locality: Amalienstein near Ladysmith.

The above described plant and *Haworthia arachnoides* (Ait.) Haw. are probably, at the present time, the largest spp. in the sect. *Setato-Araneae* (Berger) Poelln. *Haworthia gigas* Poelln. is at once distinct from others in this sect. by its large size in conjunction with the very dark color of the erect-incurving leaves, the long, subulate, glistening white teeth on the margins which stand out horizontally and the very long, ciliated terminal awn.

The photograph shows a mature plant with its very characteristic habit, very seldom does the rosette of leaves expand unless grown in too much shade and no other sp. in this sect. seems to retain this closely incurved habit so continuously. The leaves may attain a width of 1 cm. and the 4-6 mm. long teeth diminish in size from about the middle of the leaf downwards until the basal part of leaf margins is quite smooth, the terminal awn varies from 12-20 mm.

The long glistening white teeth of this sp. form a striking contrast against the very dark green, often black-green leaves and while the upper fourth of the older leaves soon withers, this only seems to add character to this fine sp. The teeth form so close an interlocking network that the centre of the plant is entirely hidden from view. The peduncle and inflorescence closely approximate, in general, that of *Haworthia arachnoides* (Ait.) Haw.

Note: The genus *Haworthia* Duval as at present known, is entirely confined to South Africa so that the localities of plants given in these notes naturally refer to their localities in South Africa. Four plants, *Haworthia stenophylla* Bak. Transvaal, *Haworthia tenuifolia* Engl. British Bechuanaland, *Haworthia angolensis* Bak. Benguella, and *Haworthia subspicata* Bak. Transvaal, formerly included in this genus, are now more correctly included in the genus *Chortolirion* Berger, *Pflanzenreich* IV. 38. III. 2 (1908) 72. So that, those spp., included in the above, which formerly extended the range of *Haworthia* beyond the confines of South Africa are now excluded.

EDITOR'S NOTE: The amateur may wish to know the meanings of the following abreviations: sp. means one species; spp. means several species; sect. means section. These are quite common terms among botanists.

AN UNUSUAL FLOWER

Last June my *Puya alpestris* was in bloom. Previous to this time have had but one blossom but this year there were seven stalks in bloom.

Two years ago, when I was in Australia, I clipped the following from the "New Zealand Small holder" (a garden magazine):

"The most remarkable plant on earth was shown in London last year by Major Dorrisen-Smith of Tresco in the Isle of Scilly. The correct name is *Puya alpestris* Poepp. It is a native of Chile. Flower metallic, blue-green, and stock about four feet high. It is one of the most remarkable plants ever shown before the Royal Horticultural Society at Westminster and was awarded the silver medal. It was described by Sir William Lawrence as resembling an immense blue and green copper finial on some medieval building in Nuremburg. The plant exhibited was sent on later to Kew Gardens."

G. G. HOAG, La Canada, Calif.

EDITOR'S NOTE: In this issue there appears a fine picture of this plant growing in the Huntington Botanical Gardens. When Mr. Hertrich exhibited these plants at a Cactus show several years ago they were one of the show attractions.

BRITTON AND ROSE REPRINT

There are only a few more sets of the reprint available that can still be obtained on your own terms. There isn't a cactus collector that cannot afford at least $1 a month for a set of Britton and Rose, containing exactly the same information as the original that sells for $300 per set. Members may still obtain a set for $40.00.

ILLUSTRATED PRONOUNCING GLOSSARY

Mr. R. S. Woods has kindly consented to act as co-author of this valued glossary of Cactus and Succulent terms. This is the most valuable contribution since the Britton and Rose reprint. Each month several pages will be printed in the center of the JOURNAL and these may be removed for binding in book form. Imagine being able to pronounce all the names of cactus and to know what they mean! And botanical terms used in descriptions will be explained and illustrated. Plan not to miss a single issue of the JOURNAL. Mr. Marshall and Mr. Woods are making a most valuable contribution to succulent literature.

NOTICE TO OUR COMMERCIAL MEN:

There have been requests for full page ads in the JOURNAL while some have requested four page sections inserted. In fairness to all dealers we will be glad to quote prices for full page ads for publication in the March issue. Requests of ten to twenty-five a day are pouring into the JOURNAL office and every request is for dealers who can supply plants. Properly worded advertisements are as educational as articles themselves and this feature should be of mutual advantage to both dealer and buyer. Write at once for information. Box 101, Pasadena, Calif.

Member L. G. Sutherland, P. O. Box 63, Avenal, Calif., experienced sad losses in recent frosts and having a sympathetic understanding for losses from water or dust storms in the middle west he makes the following offer: "I will be glad to send, without charge, Opuntia cuttings selected from 30 varieties, and small starts from other plants to those who have suffered losses."

Mr. Sutherland also states: "In this part of the state, Kettleman Hills, there are numerous beds of partly decomposed oyster shells. The soil is very rich in lime, magnesium, gypsum and copper. I have planted several varieties of cacti in this soil, just as an experiment. I have not had time to check any improvement, though my *Opuntia erinaceae* seems to be improved by longer and whiter hairs, under the same growing conditions as one in common soil.

I have lately planted several long haired *Mammillarias* in this soil, but it is too soon yet to tell anything, though they are growing nicely.

Perhaps some member would like to experiment with this soil."

EDITOR'S NOTE: *Would suggest sending Mr. Sutherland sufficient postage to cover this generous offer. There is a difficulty in shipping soil into some states and should be investigated before making this request.*

HUMMEL'S EXOTIC GARDENS

Competition is keen *What to do about it?*

We celebrate the New Year
With Twenty-five cent Opportunity Sale

Three year old seedlings at 25 cents each or the entire lot at $5.00

COLORED AND HAIRY CEREAE

Oreocereus celsianus, 5.5 cm. high; *O. trollii,* 4 cm. high; *O. fossulatus,* 8-10 cm. high; *Trichocereus huascha,* 6-10 cm. high; *Cephalocereus palmeri,* 7.5 cm. high; *C. senilis,* 4 cm. high; *C. polylophus,* 6 to 10 cm. high; *Lemaireocereus dumortieri,* 7 to 10 cm. high; *Espostoa lanata* (dautwitzii) 4 cm. high.

SYMMETRICAL, SPHERICAL, FORMS:

Mamillaria sempervivi, 2 to 4 cm. dia.; *M. viereckii,* 3 cm. up dia; *M. schiedeana,* 3 cm. up dia.; *M. celsiana,* 3.5 cm. up dia.; *M. camptotricha,* 3.5 cm. up dia.; *M. bocasana,* 4 cm. up dia.; *Malacocarpus erinaceus,* 5 cm. up dia.; *Rebutia pseudodeminuta minuscula; Aylostera spegazziniana; Notocactus scopa,* 5 cm. high; *N. ottonis,* 3 cm. dia; *Ferocactus glaucescens,* 5 cm.; *Echinocactus grusonii,* 5 cm.; *Echinopsis calochlora,* 3 cm. dia.

This is only possible through careful propagation and purchasing. Do not procrastinate, order today. Early orders get the larger plants. Consider this; you pay no duty, no postage and take no risk, safe delivery guaranteed.

If any plant of like quality can be purchased elsewhere at more reasonable prices, please inform us that we may rectify our prices.

4848 IMPERIAL HIGHWAY INGLEWOOD, CALIFORNIA

PLANTS FOR AMATEURS

Nursery grown, healthy plants suitable for bowls and window gardens. 12 labelled seedlings with growing instructions and price list, post paid in the U. S. $1.25.

Beginner's Collection of an assortment of 12 strong, healthy plants in a wide range of easily grown types that will form the foundation of a collection. Instructions and list, all post paid in U. S. for $2.00.

GATES FAMOUS CACTUS GARDENS
Dept. C, Anaheim, Calif.

SUCCULENT PLANTS by H. Jacobsen. Translated by Vera Higgins. 294 pages 7¼x10. Well printed. 277 representative illustrations of the different genera of succulents (no cacti). The genera are arranged alphabetically and contain the simplest possible description of the outer form of the plants with a short reference to the flowers. $6.50.

FRESH CACTUS SEEDS

1937 crop now available at lowest wholesale and retail prices. Dealers and commercial growers please ask for wholesale lists.

R. W. KELLY
2410 La Rosa Drive, El Monte, Calif.

WANTED: Copies of CACTUS JOURNAL. Vol. III, No. 1. Will pay $1 each. Send to Box 101, Pasadena, Calif.

We have in limited quantity the following COLORED CEREAE mentioned by Curt Backeberg in the December Journal. Send post card for sizes and prices of those not listed in our catalog.

Oreocereus Trollii, Celsianus, fossulatus
Gymnanthocereus (?) *microspermus*
Cleistocactus Morawetzianus, Buchtienii
Haageocereus acranthus, pacalensis, laredensis, chosicensis, versicolor, decumbens
Corryocactus melanotrichus
Trichocereus Pachanoi
Eulychnia spinibarbis
Erdisia Meyenii, maxima

R. W. POINDEXTER NURSERY
1000 North Temple Street
Compton, California

RIO GRANDE VALLEY CACTUS GARDEN
J. R. PIRTLE & SONS
EDINBURG, TEXAS

Native and Exotic Cacti and other Succulents

WHOLESALE RETAIL

Write for our Price List

Owner of the Export permit of the Mexican Government, offers Mexican cacti, especially beautiful show plants, at moderate prices.

FERDINAND SCHMOLL
Cadereyta, Qro., Mexico

MESEMBRIANTHEMUM

We have the largest collection of Mesembryanthemum

Every month we add new species, described and published from the worlds authorities.

Ask for our general price list

S. W. AFRICA SUCCULENTS NURSERIES
P. O. Box 539
Wilhelm Triebner, Windhoek, S. W. Africa
Cable: *Succulents*

SPECIAL THIS MONTH
$1 POSTPAID

Any one of the following, three to four inch, fine woolly foreign cacti especially suitable for gifts:

Oreocereus trollii and celsianus
Neomammillaria hahniana and *plumosa* (grafted)
Espostoa lanata

To any one sending $5.00 for all of them a 2 inch *Pilocereus dybowskii* or 6 inch *Oreocereus fossulatus* free.

KNICKERBOCKER NURSERY
R 3, San Diego, Calif.
Californians send 3% tax.
Free illustrated catalogue